



SMYN / PGMS PROFESSIONAL WORKSHOP: Erosion and Sediment Control

February 7, 2012

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Preventing the Release of Sediment



To our roads...



To pervious pavement...

To our inlets and MS4...



...To our rivers and oceans.



<http://www.umrcc.org/River%20Issues.html>



<http://www.usouthal.edu/geography/fearn/480page/98Gerrit/Gerritt.html>

Impacts of **Sediment**

- Transports other pollutants (petroleum products, metals, chemicals, pesticides, bacteria, etc.)
- Harmful to aquatic life
- Increased turbidity
- Sedimentation destroys aquatic habitats (from streams to coral reefs)



Regulations

***EPA and Missouri DNR require Land Disturbance Permits on sites > 1 acre or part of a common plan**



***City of Springfield requires Land Disturbance Permits on sites > 1 acre or part of a common plan AND/ OR within 25 feet of a watercourse**



***Permitted sites must maintain a “Storm Water Pollution Prevention Plan” (SWPPP)**

Regulations

Regardless of project size...

- Release of sediment into the MS4 is prohibited
- Small sites still require BMPs
- Found in City Ordinance

Sec. 96-27. Unlawful to discharge other than storm water into city waters, waters of the state, and city's MS4.

- (j) Degreasers, Solvents
- (k) Heated Water
- (l) Sanitary Sewage, including pollutants
- (m) Chemically Treated Cooling Water
- (n) Antifreeze, and other Automotive
- (o) Lawn Clippings, Leaves or Branches
- (p) Animal Carcasses
- (q) Silt
- (r) Acids or Alkalis
- (s) Recreational Vehicle Waste
- (t) Dyes (without prior approval from the City)
- (u) Construction Materials

96-22. Erosion and Sediment Control.

The Responsible Party shall control site erosion and the release of sediment and other pollutants resulting from land disturbance activities to the Maximum Extent Practicable (MEP) utilizing Best Management Practices (BMPs). The Responsible Party shall ensure that BMPs are designed, constructed and maintained during land disturbance activities in accordance with the most recent version of the City's Erosion and Sediment Control Guidelines Manual, Storm Water Design Criteria Manual, Design Standards for Public Improvements and the General Conditions and Technical Specifications for Public Improvements.

Best Management Practices (BMPs)

http://www.springfieldmo.gov/stormwater/esc/esc_bmp.html

The screenshot shows a Windows Internet Explorer browser window displaying the City of Springfield, MO website. The address bar shows the URL http://www.springfieldmo.gov/stormwater/esc/esc_bmp.html. The page features a navigation menu with links to SERVICES, GOVERNMENT, COMMUNITY, NEWCOMERS, and SITE MAP. The main content area is titled "EROSION/SEDIMENT CONTROL BEST MANAGEMENT PRACTICES" and contains two paragraphs of text. A sidebar on the left lists "STORM WATER SERVICES: DEVELOPER RESOURCES" with links to "Home & Design Criteria", "Erosion/Sediment Control:", "Introduction", "Land Disturbance Permit", "Best Management Practices" (highlighted), and "Storm Water Pollution Prevention Plans". A circular seal on the right reads "UPSTREAM STARTS HERE" and "PROTECT OUR WATERWAYS". Below the seal is a "Public Works Storm Water Services" logo. At the bottom right, there is a "CONTACT US" section with the address "Busch Building, 840 Boonville Avenue, Springfield, MO 65802", the phone number "Tel: 417.864.1944", and a link to "E-mail us".

City of Springfield, MO: Storm Water - Erosion/Sediment Control, Best Management Practices - Windows Internet Explorer

http://www.springfieldmo.gov/stormwater/esc/esc_bmp.html

File Edit View Favorites Tools Help

Convert Select

Favorites KSMU Calendar KSMU Contract Documents after After the exam Erosion & Sediment Control Missouri Code of State Reg... Municode - Search

City of Springfield, MO: Storm Water - Erosion/Sediment Control, Best Management Practices

HOME

CITY OF SPRINGFIELD, MO
working with the community for
ethical, responsible government

SERVICES GOVERNMENT COMMUNITY NEWCOMERS SITE MAP

Home » Services » Storm Water » Developer Resources » Erosion Control » Best Management Practices

**STORM WATER SERVICES:
DEVELOPER RESOURCES**

Home & Design Criteria

Erosion/Sediment Control:

Introduction

Land Disturbance Permit

➔ **Best Management Practices**

Storm Water Pollution Prevention Plans

**EROSION/SEDIMENT CONTROL
BEST MANAGEMENT PRACTICES**

The purpose of the Erosion Prevention and Sediment Control Guidelines (BMP) Manual is to provide a comprehensive and detailed approach towards preventing erosion and controlling sediment on construction sites. It has been updated to include the latest information regarding materials and installation practices that have proven effective over the past years. There are numerous other resources available and readers are encouraged to refer to the reference document listed in the Appendices.

Another unique feature of this manual is its educational value. Under the National Pollution Discharge Elimination System (NPDES) rules, public involvement and educational outreach has been incorporated to play a major part in water quality standards.

UPSTREAM STARTS HERE
PROTECT OUR WATERWAYS

**Public Works
Storm Water
Services**

CONTACT US

Busch Building
840 Boonville Avenue
Springfield, MO 65802
Tel: 417.864.1944

E-mail us

Best Management Practices (BMPs)



Erosion and Sediment Control on Small Sites



- Avoid creating “trackout”
- Clean streets as necessary
- Construction exit?



Erosion and Sediment Control on Small Sites

Locate stockpiles to minimize loss of sediment:

- Buffer with grass
- Use perimeter control on lower side

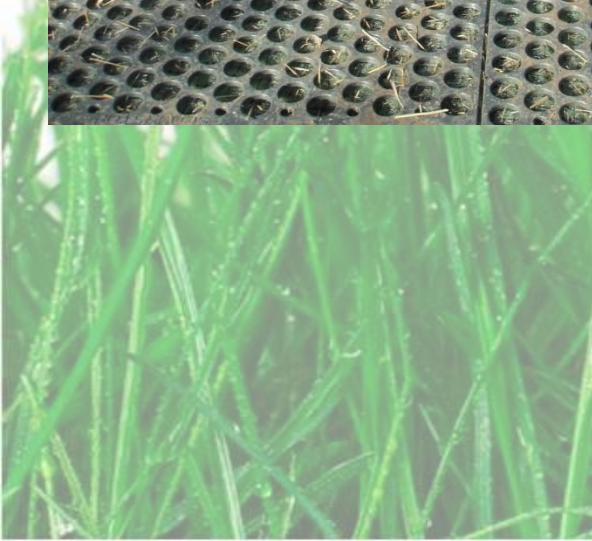
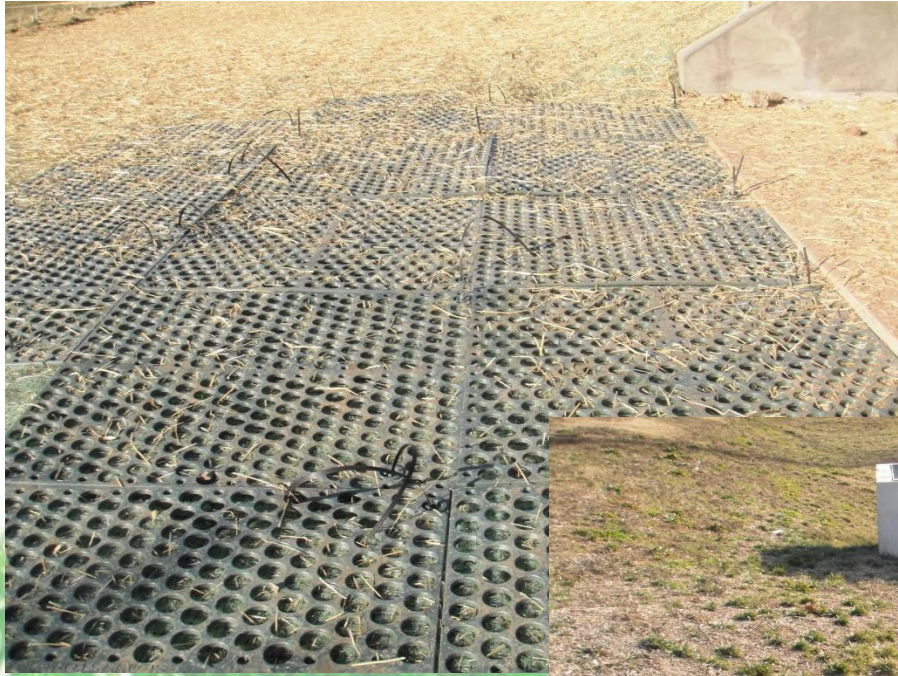


Working with swales:

- A ditch check may be appropriate until stabilized



ScourStop



Erosion and Sediment Control on Small Sites

- Locate temporary roadways away from stands of trees and shrubs
- Keep materials stored away from protected vegetation
- Restrict heavy equipment, vehicular traffic and storage piles to outside the drip line of protected trees

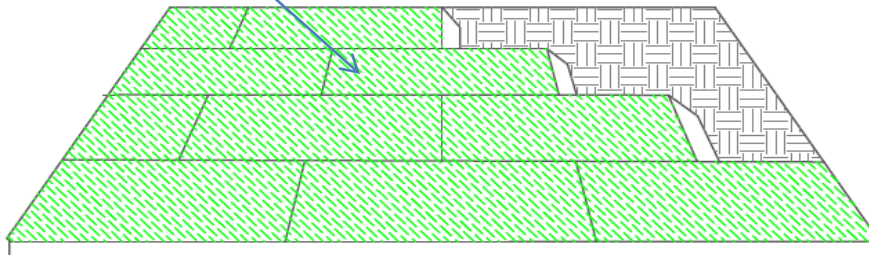


<http://www.google.com/imgres?q=orange+protective+tree+fencing>

Achieving Stabilization

http://www.springfieldmo.gov/stormwater/esc/esc_bmp.html

- Mulch
- Seed / Straw
- Hydroseeding
- Sodding



LAY SOD IN A STAGGERED PATTERN WITH STRIPS BUTTED TIGHTLY AGAINST EACH OTHER

ON SLOPE > 3:1 USE PEGS OR STAPLES TO FASTEN SOD FIRMLY AT THE CORNERS AND CENTERS.

INSTALLATION OF GRASS SOD

Topsoil Requirements
Permanent and Temporary Seeding -Loosen compacted soils to a depth of 4 inches. If rainfall causes the surface to become sealed or crusted, loosen it just prior to seeding. Slopes steeper than 3:1 grade should be grooved or furrowed on the contour before seeding. A good seedbed is well pulverized, loose, and uniform.
Permanent Seeding -A minimum of 4 inches of loose topsoil should be spread on areas to be seeded.
Lime Requirements
Permanent and Temporary Seeding -Lime should be applied according to soil test recommendations. If the pH of the soil is unknown, lime shall be incorporated into the top 4 inches of soil at the rate of 1500 pounds effective neutralizing material (ENM) per acre. Soils with a pH of six or higher need not be limed.
Fertilizer Requirements
Permanent Seeding -Fertilizer should be applied based on soil tests. When these are not possible, a 13-13-13 grade fertilizer shall be incorporated into the top 4 inches of soil at the rate of 500 pounds per acre.
Temporary Seeding -Fertilizer should be applied based on soil tests. When these are not possible, a 10-10-10 grade fertilizer shall be incorporated into the top 4 inches of soil at the rate of 200 pounds per acre.
Seed Requirements
Permanent Seeding -Seed mix shall consist of ninety percent (90%) tall fescue and ten percent (10%) annual ryegrass. Seed mixture shall be applied at a rate of 400 pounds per acre.
Temporary Seeding -Seed mix shall consist of any combination of tall fescue, annual ryegrass, sudan, millet, wheat, or oats. Seed mixture shall be applied at a rate of 200 pounds per acre.
Dormant Season Seeding -Seed mix shall consist of 80 percent (80%) tall fescue, ten percent (10%) annual ryegrass, and ten percent (10%) spring oats. Seed mixture shall be applied at a rate of 600 pounds per acre.
Mulch Requirements
Permanent and Temporary Seeding -Where slopes are less than 25 percent (4:1) grade, cereal grain mulch is required at the rate of 100 pounds per 1,000 square feet (4,500 lbs/acre). Cereal grain mulch shall meet the requirements of Section 802 of the Missouri State Specifications for Highway Construction for Type 1 mulch. Where slopes are 25 percent (4:1) or greater grade, Type 3 mulch ("hydromulch") meeting the requirements of Section 802 of the State specifications
Dates For Seeding
Permanent Seeding -March 1 to June 1 and August 15 to November 1
Temporary Seeding -Can occur during any season, however winter is the least tolerant.
Dormant Season Seeding -December 15 to February 29

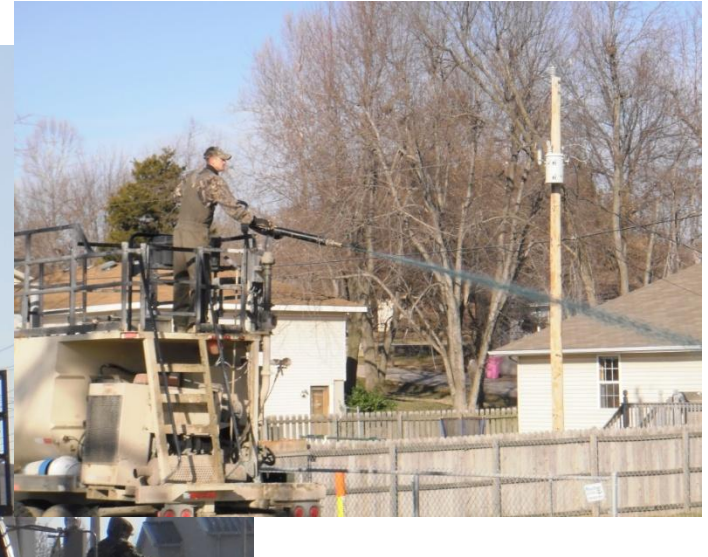
Mulch



Seed and Straw



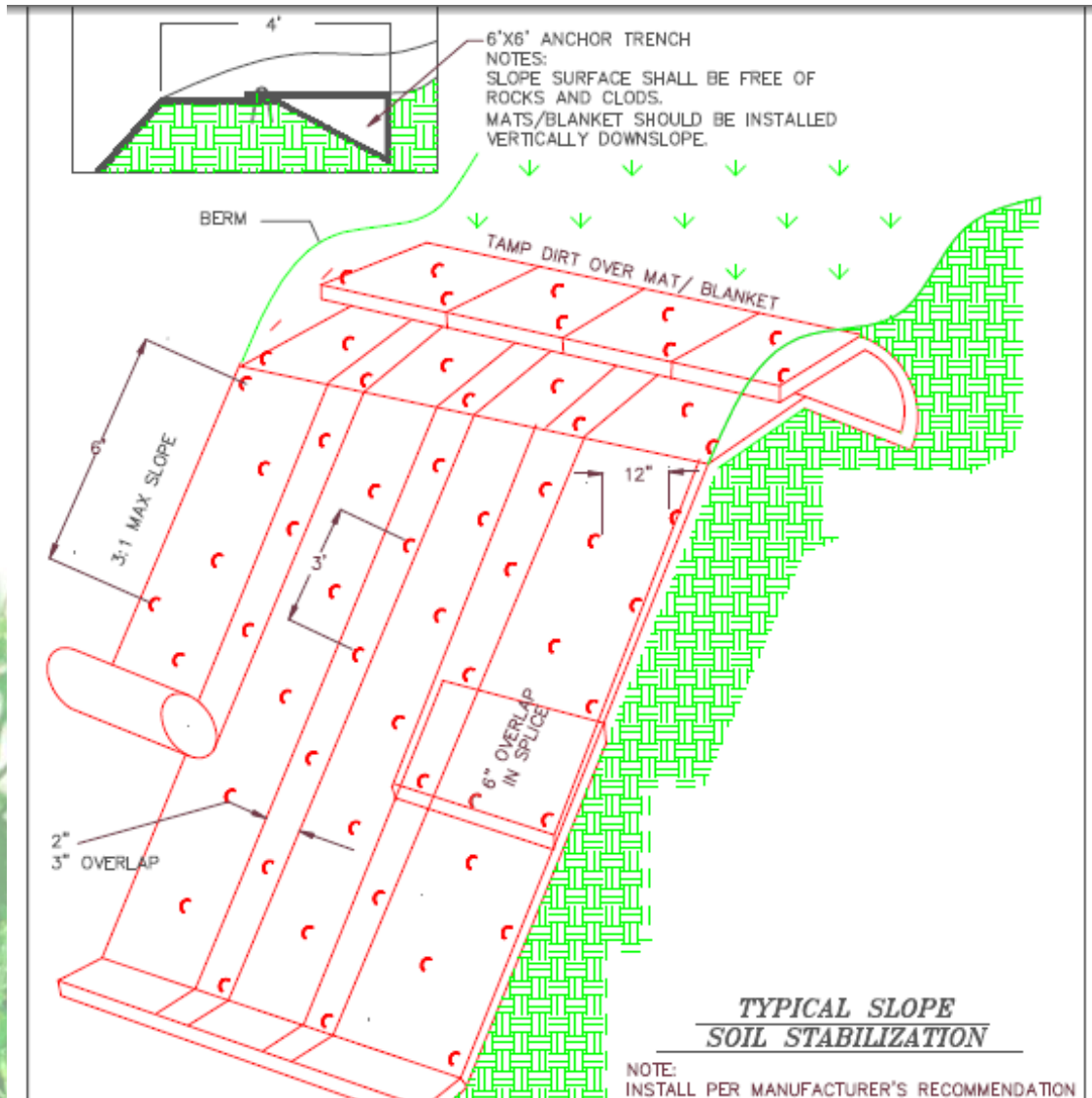
Hydroseed



Sod



Erosion Control Blankets

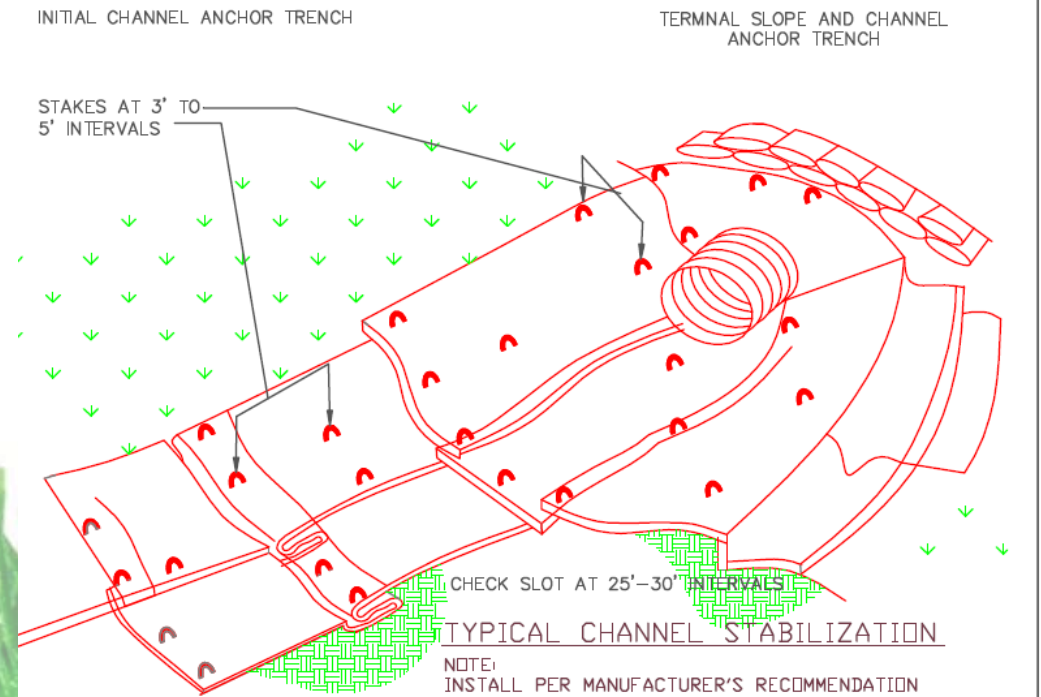


- Can be used for temporary or permanent erosion control
- Installed after grading or installation of vegetation
- Need firm contact with soil
- Install perpendicular to flow
- To repair erosion: pull back the blanket, fill eroded area, revegetate and secure blanket
- Degrade naturally or remain in place



Turf Reinforcement Mats

- For permanent erosion control
- Ideal for steep slopes and channels with high water velocities
- Installed following grading or seeding
- Needs intimate contact with soil
- Repair erosion by pulling back the mat, filling the eroded area, revegetating, and securing the mat again
- Mats are typically left in place permanently

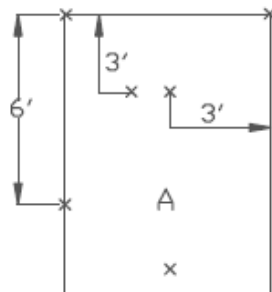


Determining Staple Pattern

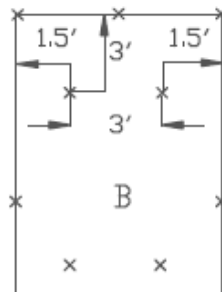
LENGTH AND SLOPE TABLE

300	B	C	C	C	C	D
150		B				
FT	A	A	B	B		
	4:1	3:1	2:1	1:1	LDW FLOW CHANNEL	MED/HIGH FLOW

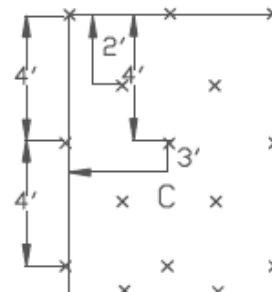
*MINIMUM STAPLE PATTERN GUIDE AND RECOMMENDATION
FOR SLOPE AND CHANNEL APPLICATION



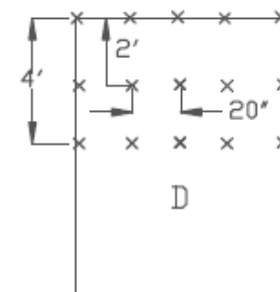
1 STAPLE PER SQ YD



1.5 STAPLES PER SQ YD



2 STAPLES PER SQ YD



3.5 STAPLES PER SQ YD



Streambank Stabilization



Streambank Stabilization



- May use willows, dogwoods, etc.
- Plant pointing downstream
- Cover 75-80% of the stake – these stakes are 4 foot long, so less than a foot should be exposed

Questions?



Thank you!